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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,616

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Paul Leslie Burn

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QUARLES & BRADY LLP
411 E. WISCONSIN AVENUE
SUITE 2040
MILWAUKEE, WI 53202-4497

EXAMINER

CROUSE, BRETT ALAN

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/525,616	Applicant(s) BURN ET AL.	
	Examiner Brett A. Crouse	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-14,16,17,24 and 26-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-14,16,17,24 and 26-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20050225,20050721</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-5, 11-14 and 16 rejected under 35 U.S.C. 102(b), as being anticipated by Killat et al., US 4,871,779.

Killat teaches:

As to claims 1, 3-5 and 16:

Column 2, lines 23-42, teach dendritic star polymers.

Column 10, lines 63 through column 11 line 2, teaches the dendrimers can have from 1 to 12 generations, preferably 2 to 6 generations. The passage also teaches conversion to a suitable terminal group.

Column 6, line 44 through column 7, line 2, teaches various terminal groups.

Column 18, lines 61-67, example 6, teach a composition comprising a second generation dendrimer and a third generation dendrimer having the same core. The dendrimers have a molar ratio of between 1:1 and 1:50.

As to claims 11-14:

Column 10, lines 1-63, teach a example dendrimer structure. The passage additionally teaches the terminal groups of the dendrimer can be conjugated aromatic groups such as oxazolinyl or oxiranyl.

Art Unit: 1794

3. Claims 1-6 and 8-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomalia et al., US 5,714,166.

Tomalia teaches:

As to claims 1-6, 16:

Column 14, lines 56-64, teach dendrimers of generation 1-5.

Column 11, lines 64-67, teach the notation of the dendrimers is the generation and (core).

Column 44, lines 37-42, figure 15, teaches mixed dendrimers of different generations.

Column 104, line 1 through column 105, line 43, table XII, teach as examples P and Q blends of dendrimers in which three or more dendrimers of different generation have the same core and include a dendrimer of generation 1. The passage also teaches the percentages of the each of the dendrimers used. The passage teaches complexing the dendrimers with an enzyme. This is equated with modifying the surface, resulting in matching surface groups upon the various dendrimers of the blend.

As to claims 8-10, 17:

Column 16, line 56 through column 17, line 5, and column 19, lines 11-28, teach the dendrimers can include fluorescent and phosphorescent emitting entities. The passage additionally teaches the dendrimer can comprise metal chelates.

As to claims 11-14:

Column 60, line 19 through column 63, line 9, teach aniline derivatives can be a component of the dendrimer.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Killat et al., US 4,871,779, as applied to claims 1, 3-5, 11-14 and 16 above.

The teachings of Killat as in the rejection above are relied upon.

Killat teaches:

Column 13, lines 3-46, table 2, provides examples of inventive polyamidoamines of generations 1, 2, and 3.

Killat does not recite a mixture of dendrimers comprising a first generation dendrimer or a mixture comprising 3 dendrimers of different generations. However, Killat teaches dendrimers of generations 1 to 12, provides on Table 2 inventive examples of dendrimers of generations 1-3 and provides an example of a mixture of dendrimers.

It would have been obvious to one of ordinary skill in the art to select a first generation dendrimer from the inventive examples of Killat and use the dendrimer in a mixture of inventive dendrimers of Killat with the expectation that the composition would provide suitable properties as taught by Killat.

It would have been obvious to one of ordinary skill in the art to combine three inventive dendrimers of differing generation of Killat in order to form a composition suitable for the same

Art Unit: 1794

purpose as the combination of two inventive dendrimers as taught by Killat, such as in example 6 of Killat.

6. Claims 1, 3-6, 11, 12, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al., US 2002/0102434.

Inoue teaches:

Paragraph [0022], formula (I), teaches an electroluminescent device comprising a compound of formula (I).

Paragraphs [0058]-[0062], teach the R_{01} , R_{02} , R_{03} and R_{04} substituents of formula (I). The passage additionally teaches in paragraph [0060] that an aryl substituent can be further substituted with one or more additional aryl amine groups. Such substitution allows for the formation of higher generation dendrimers. The passage additionally teaches alkyl groups, preferably methyl groups, as substituents upon the aryl groups.

Paragraphs [0148] and [0156], teach the compounds of formula (I) can be used alone or combination.

Paragraph [0147], teaches compounds of formula (I) have a high hole mobility.

Inoue does not teach:

Inoue does not provide an example of a mixture of compounds of formula (I). However, Inoue teaches compounds of formula (I) can be used in combination.

Statement of Obviousness:

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use in combination a plurality of compounds of formula (I) of Inoue, as

Art Unit: 1794

suggested by Inoue, having the R₀₁, R₀₂, R₀₃ and R₀₄ substituents resulting in multi-generational dendrimers having a high hole mobility as taught by Inoue.

With regard to the surface groups of the compounds of Inoue it would have been obvious to use the preferred surface groups of alkyl (methyl) as taught by Inoue in the compounds of Inoue such as provided in the example compounds of Inoue.

7. Claims 2, 8, 9, 10, 24 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al., US 2002/0102434, as applied to claims 1, 3, 4, 5, 6, 11, 12, 14 and 16 above, and further in view of Baldo et al., Physical Review B, (2000), Volume 62, Number 16, Pages 10,958-10,966.

The teachings of Inoue as in the rejection above are relied upon.

Inoue teaches:

Paragraphs [0149]-[0150], teach electroluminescent device structures comprising one or more hole transport/injection layers, a light emitting layer, and one or more electron transport/injection layers.

Paragraph [0152], teaches compounds of formula (I) can be used in the hole injecting, hole transporting and light emitting layers.

Paragraph [0158], teaches the light emitting layer can additionally comprise an additional fluorescent dopant.

Paragraph [0177], teaches the light emitting layer can comprise three materials providing the function of hole transport, electron transport and fluorescent emission.

Inoue does not teach:

Art Unit: 1794

Inoue does not teach the light emitting properties of the compounds of formula (I).

However, Inoue teaches the compounds are useful in the light emitting layer of an electroluminescent device.

Baldo teaches:

Page 10,961, teaches TPD is useful as a fluorescent host material. The passage also teaches the measurement of the phosphorescent properties of TPD.

Statement of Obviousness:

It would have been obvious to one of ordinary skill in the art to expect the higher generation dendrimers of Inoue to exhibit similar fluorescent and phosphorescent properties of the generation 1 dendrimer, TPD, due to the structural similarity between the compounds. It would additionally have been obvious to use the dendrimers as host materials in the light emitting layer as taught by Baldo and suggested as suitable by Inoue with the expectation that the materials would provide light emission and high hole mobility as suggested by the references.

It would have been obvious to one of ordinary skill in the art to optimize the relative proportions of the dendrimers in order to arrive at a desired hole mobility and emissive property of the composition.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is (571)-272-6494. The examiner can normally be reached on Monday - Friday.

Art Unit: 1794

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton I. Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. A. C./

Examiner, Art Unit 1794

/Dawn Garrett/

Primary Examiner, Art Unit 1794